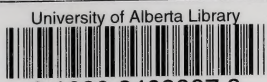
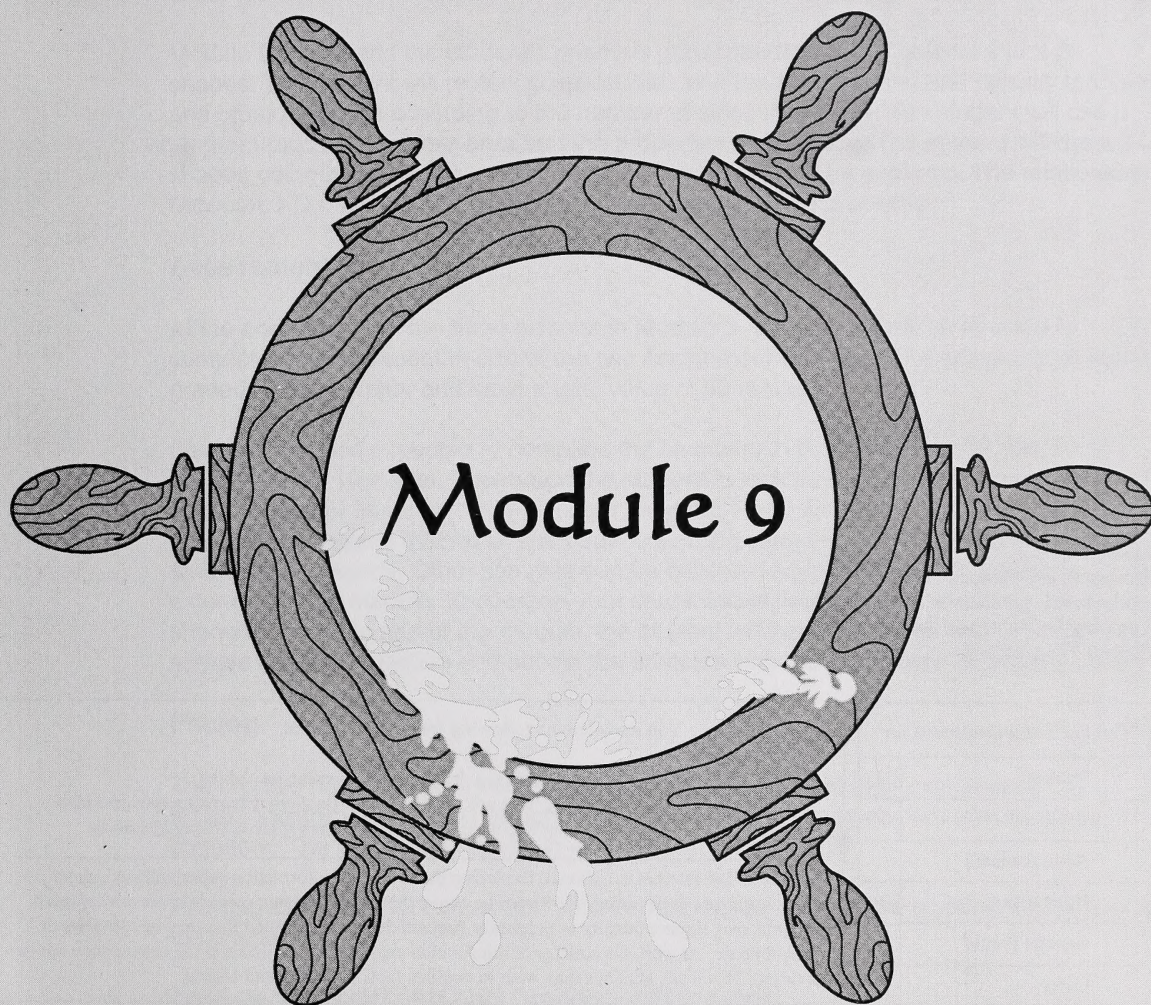


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# Mathematics 5



## Home Instructor's Guide and Assignment Booklet 9A





Mathematics 5  
 Module 9: 2-D Shapes and 3-D Objects  
 Home Instructor's Guide and Assignment Booklet 9A  
 Learning Technologies Branch  
 ISBN 0-7741-2105-X

This document is intended for	
Students	✓
Teachers	✓
Administrators	
Home Instructors	✓
General Public	
Other	



You may find the following Internet sites useful:

- Alberta Learning, <http://www.learning.gov.ab.ca>
- Learning Technologies Branch, <http://www.learning.gov.ab.ca/ltb>
- Learning Resources Centre, <http://www.lrc.learning.gov.ab.ca>

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## **Module 9: 2-D Shapes and 3-D Objects**

### **Overview**

Module 9 will extend the student's previous understanding of 3-D objects and 2-D shapes. The student will review quadrilaterals and learn to describe and classify triangles and other polygons according to the number of sides they have. The student will use a tangram puzzle to explore area and the properties of polygons. The student will draw 3-D shapes using triangular dot paper. Planes of symmetry will be explored. The relationship between 3-D objects and 2-D shapes will be used to solve problems.

### **Assessment**

At the end of each of the three lessons in Module 9, the student will be directed to complete an assignment in one of the two Assignment Booklets. The assignments will be graded by the teacher and have a total value of 90 marks.

Students are also expected to complete the Numbers in the News project. This project has a value of 10 marks. Encourage the student to look through a newspaper at least once a week for items on the Scavenger Hunt list. Read through the list with your student and suggest that he or she begin collecting samples of the ideas that he or she already understands. Other samples can be collected as ideas are introduced or extended in the module. Encourage your student to collect as many samples as he or she wishes. At the end of the module, the student will need to choose at least one sample for each question and submit the samples with the Assignment Booklet.

### **Pacing**

The module has been designed so that students can work at their own pace. Each lesson, including the lesson assignment, will take the average student about one week to complete. The Challenge Activity in each lesson is optional.

Allowing extra time for review and project work, Module 9 will take students 3 to 4 weeks to complete.

## **Lesson 1: Identifying and Drawing 2-D Shapes**

### **Overview**

In this lesson the student will review quadrilaterals and further explore triangles by building, sorting, and naming them according to the number of sides. The student will identify, describe, and name both irregular and regular polygons.



**Special Requirements**

You may gather the following materials for your student to use in this lesson:

- about a dozen straws of each of the following lengths: 9 cm, 15 cm, and 20 cm
- about a dozen bendable straws
- scissors
- toothpicks

**Sharing Time**

Students are asked to discuss what they are learning with their home instructor once in Lesson 1—at the end of Activity 3.

**Activity 3 Sharing Time**

Practice and Homework Book, page 119

Encourage the student to ask questions such as the following that require a yes or no response and narrow the possibilities.

- Does the polygon have more than three sides?
- Does the polygon have a right angle?

**Lesson 2: Tangrams****Overview**

In Lesson 2 the student will review the use of geometric terms. The student will rearrange all or some of the pieces of a tangram to make other shapes.

**Special Requirements**

You may gather the following materials for your student to use in this lesson:

- sheet of paper
- scissors

**Sharing Time**

Students are asked to discuss what they are learning with their home instructor once in Lesson 2—at the end of Activity 1.

**Activity 1 Sharing Time**

Some students have more difficulty than others with visual puzzles. Like any skill, solving tangram puzzles will become easier with practice.

Your student may wish to find other tangram puzzles on the Internet or in books.

## ASSIGNMENT BOOKLET 9A

Mathematics 5

Module 9: Lesson 1 Assignment and Lesson 2 Assignment

Home Instructor's and Student's Comments:

**STUDENT FILE NUMBER**  
(if label is missing or incorrect)

Date Submitted:

Apply Module Label Here

Name

Address

Postal Code

*Please verify that preprinted label is for  
correct course and module.*

### FOR SCHOOL USE ONLY

Assigned Teacher:

Date Assignment Received:

Grading:

Teacher's Comments

Teacher's Signature

Home Instructor: Keep this sheet when it is returned to you as a record of the student's progress.



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- Are all the assignments completed? If not, explain why.
- Has your work been reread to be sure the spelling and details are correct?
- Is the record form filled out and the correct module label attached?

### **MAILING**

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### **FAXING**

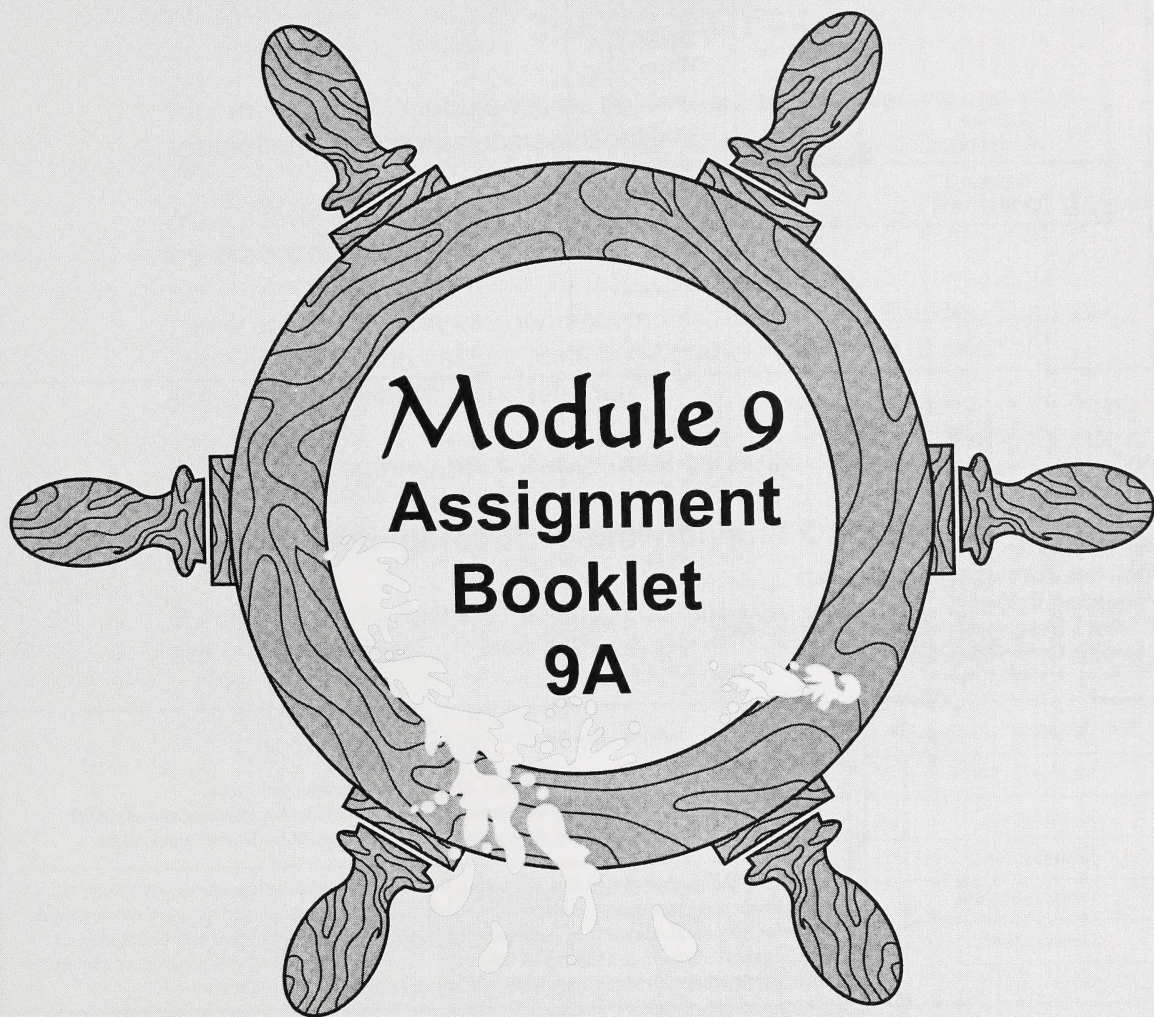
1. Assignment Booklets may be faxed. Contact your teacher for the fax number.
2. All faxing costs are the responsibility of the sender.

### **E-MAILING**

Assignment Booklets may be e-mailed. Contact your teacher for the e-mail address.



# Mathematics 5



## 2-D Shapes and 3-D Objects



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LEARNING



## FOR TEACHER'S USE ONLY

### Summary

	Total Possible Marks	Your Mark
Lesson 1 Assignment	35	
Lesson 2 Assignment	25	
	60	

### Teacher's Comments

Mathematics 5

Module 9: 2-D Shapes and 3-D Objects

Assignment Booklet 9A

Lesson 1 Assignment and Lesson 2 Assignment

Learning Technologies Branch

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Students	✓
Teachers	✓
Administrators	
Home Instructors	
General Public	
Other	



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## ASSIGNMENT BOOKLET 9A

### MATHEMATICS 5—MODULE 9: 2-D SHAPES AND 3-D OBJECTS

Your mark on this module will be determined by how well you do your assignments in the Assignment Booklets.

Work slowly and carefully. If you are having difficulties, go back and review the appropriate lessons.

There are two lesson assignments in this Assignment Booklet. The total value of the lesson assignments is 60 marks. The value of each assignment is stated in the left margin.

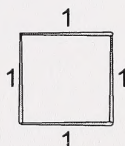
Be sure to proofread each assignment carefully.

35

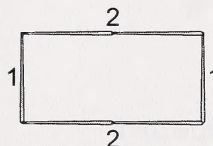
#### Lesson 1 Assignment: Identifying and Drawing 2-D Shapes

By placing toothpicks end-to-end, you can form quadrilaterals. Following are two examples:

- You can form a square with four toothpicks.



- You can form a rectangle with six toothpicks.





⑥

1. Arrange **eight** toothpicks end-to-end to form the following quadrilaterals. Draw a picture of each quadrilateral and label each side with the number of toothpicks you used.

a. Parallelogram

b. Square

c. Rhombus

d. Rectangle

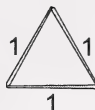
e. Trapezoid

f. Kite



2. By placing toothpicks end-to-end, you can form triangles.

You can form an equilateral triangle with three toothpicks.



You can form an isosceles triangle with five toothpicks.



Arrange **eight** toothpicks end-to-end to form the following triangles, if possible. Draw a picture of the triangle if it is possible. If you can't make a triangle, use a picture to help you explain. Label each side with the number of toothpicks you used.

②

a. Equilateral triangle

②

b. Isosceles triangle



②

c. Scalene triangle

3. Arrange **nine** toothpicks end-to-end to form the following triangles.  
Draw a picture of each triangle and label each side with the number of toothpicks you used.

②

a. Equilateral triangle

②

b. Isosceles triangle

②

c. Scalene triangle

- ② 4. a. Draw and label a picture of a quadrilateral that has all sides the same length but that is not regular.

- ② b. What is the special name for the quadrilateral you drew in question 4.a.?

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- ② 5. a. Draw and label a picture of a quadrilateral that has all angles the same size but that is not regular.

- ② b. What is the special name for the quadrilateral you drew in question 5.a.?

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②

6. a. Draw and label a picture of a regular quadrilateral.

①

b. What is the special name for the quadrilateral you drew in question 6.a.?

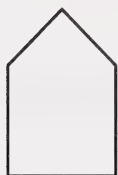
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7. Name each of the following polygons and explain why it is regular or irregular.

②

a.



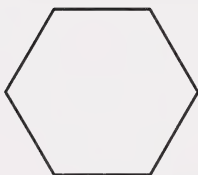
Name: \_\_\_\_\_

Explanation: \_\_\_\_\_

\_\_\_\_\_

②

b.



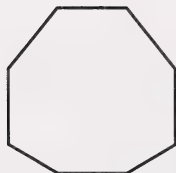
Name: \_\_\_\_\_

Explanation: \_\_\_\_\_

\_\_\_\_\_

②

c.



Name: \_\_\_\_\_

Explanation: \_\_\_\_\_

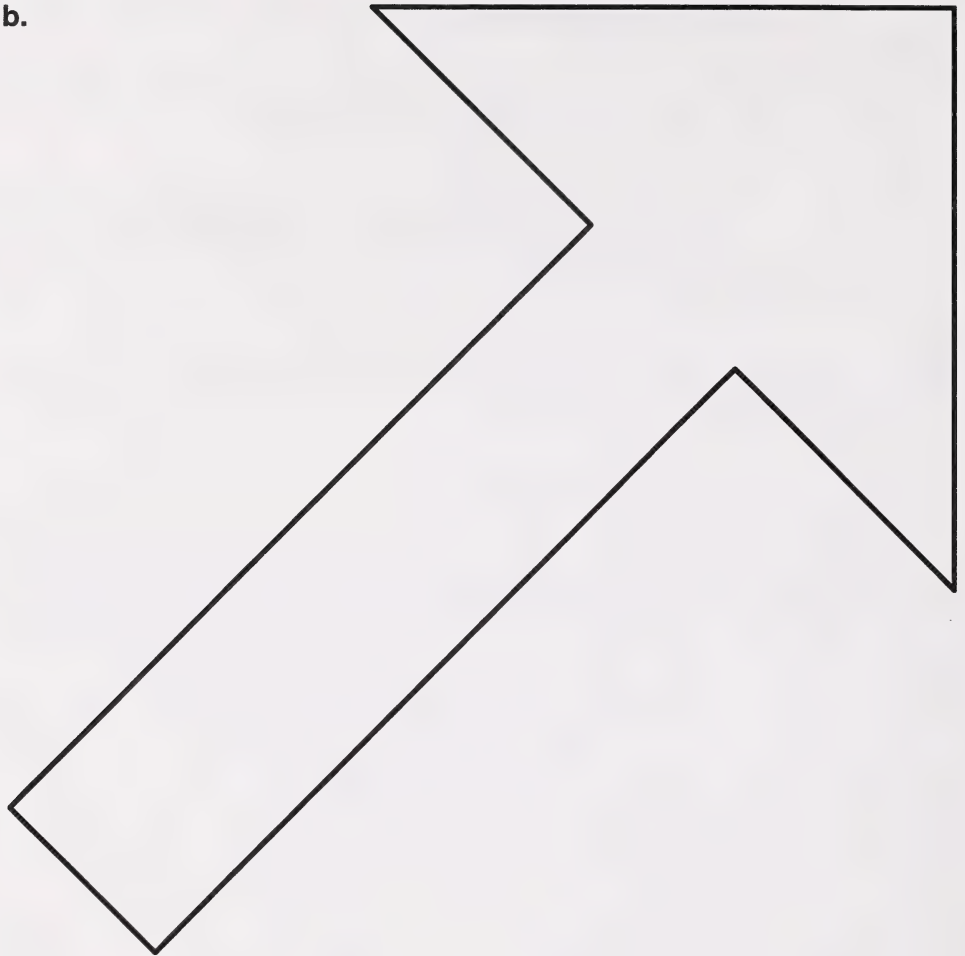
\_\_\_\_\_





⑤

**b.**

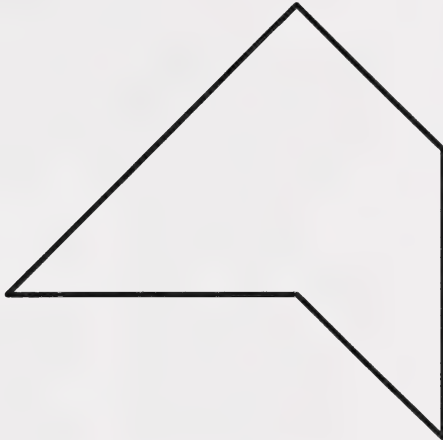


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2. Name each of the following shapes. Then use some of your tangram pieces to cover each shape. Show how you arranged your pieces by drawing and labelling them.

③

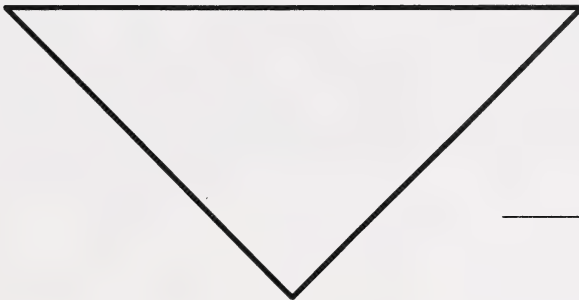
a.



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③

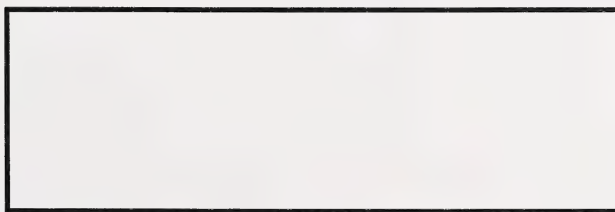
b.



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③

c.

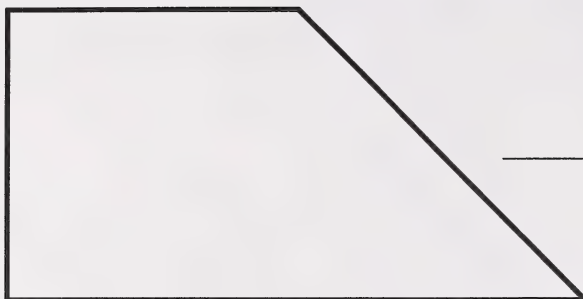


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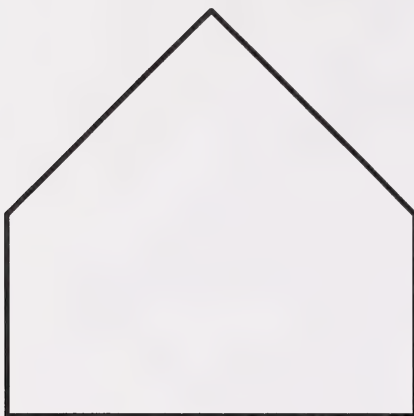
③

d.

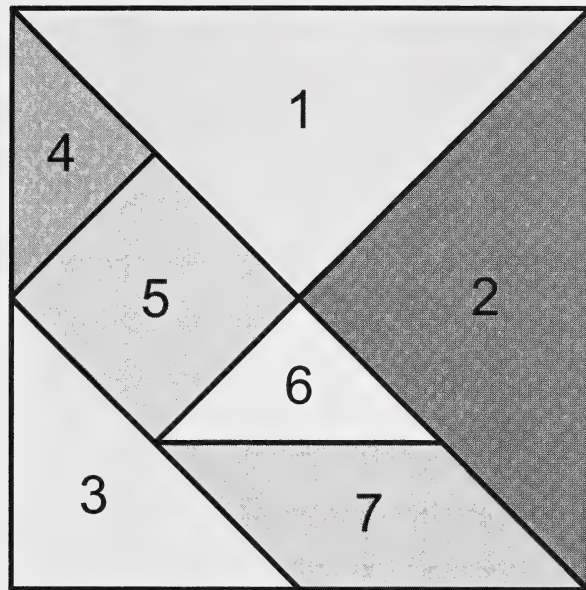


③

e.



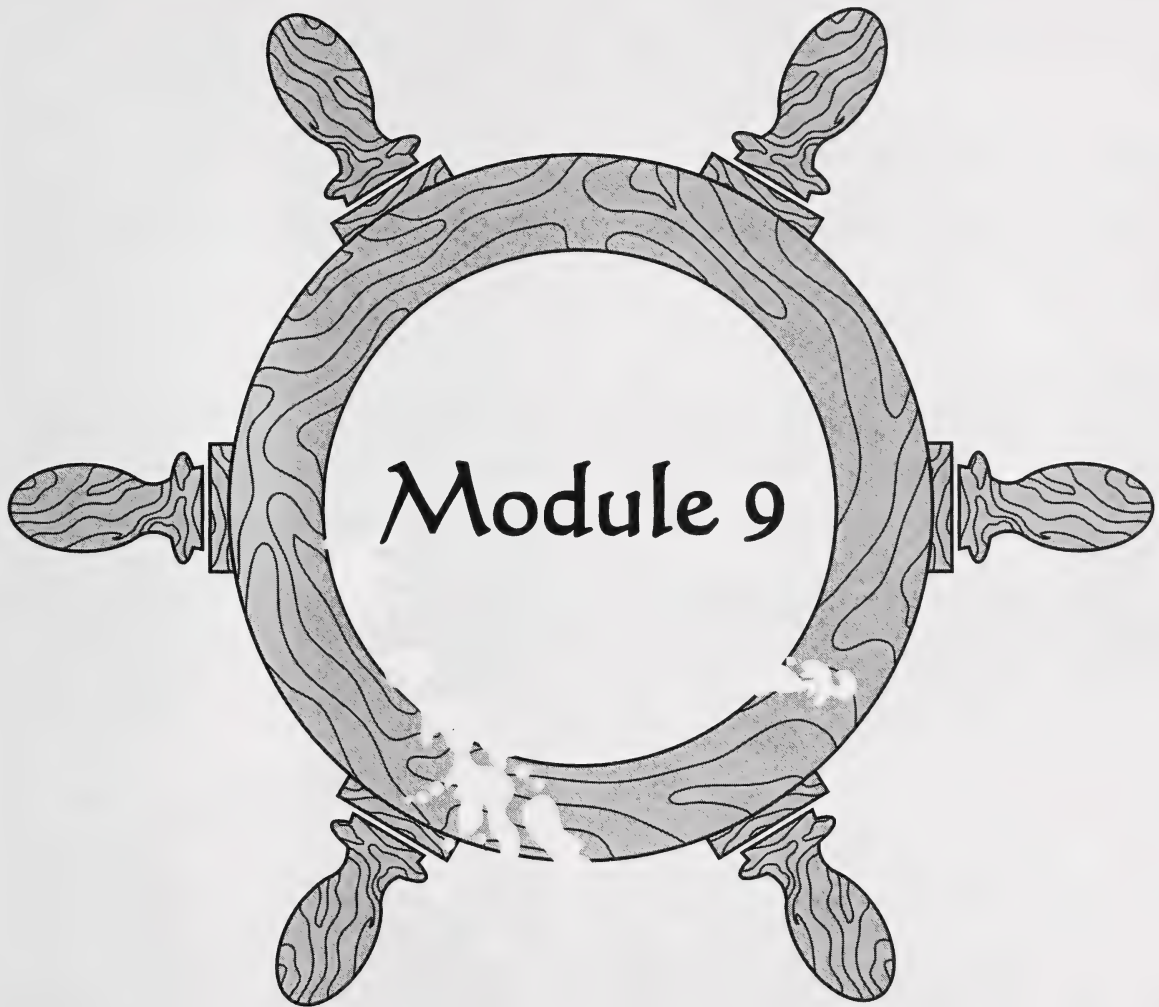
## Tangram







# Mathematics 5



## Home Instructor's Guide and Assignment Booklet 9B



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**Alberta**  
LEARNING

Mathematics 5  
 Module 9: 2-D Shapes and 3-D Objects  
 Home Instructor's Guide and Assignment Booklet 9B  
 Learning Technologies Branch  
 ISBN 0-7741-2106-8

This document is intended for	
Students	✓
Teachers	✓
Administrators	
Home Instructors	✓
General Public	
Other	



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### Lesson 3: Building and Drawing 3-D Objects

#### Overview

In Lesson 3 the student will learn how to draw 3-D objects on triangular dot paper and will explore planes of symmetry in 3-D objects. The relationship between 3-D objects and 2-D shapes will be extended and used to solve problems.

#### Special Requirements

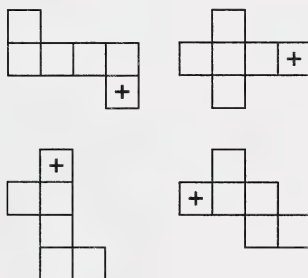
You may gather the following materials for your student to use in this lesson:

- ruler
- small cubes from set of base ten blocks
- mirror or plastic Mira

#### Sharing Time

There is one Sharing Time exercise in this lesson—at the end of Activity 3.

#### Activity 3 Sharing Time



#### Module Summary

In the Module Summary students are asked to complete the Numbers in the News Project and send the completed project with Assignment Booklet 9B to the teacher.

Following the Module Summary are Keystrokes and Review. These special activities can be assigned at a later time to review the module ideas and prepare for the final test.



## ASSIGNMENT BOOKLET 9B

Mathematics 5

Module 9: Lesson 3 Assignment and Numbers in the News

Home Instructor's and Student's Comments:

**STUDENT FILE NUMBER**

(if label is missing or incorrect)

Date Submitted:

Apply Module Label Here

Name

Address

Postal Code

*Please verify that preprinted label is for  
correct course and module.*

**FOR SCHOOL USE ONLY**

Assigned Teacher:

Date Assignment Received:

Grading:

Teacher's Comments

Teacher's Signature

Home Instructor: Keep this sheet when it is returned to you as a record of the student's progress.



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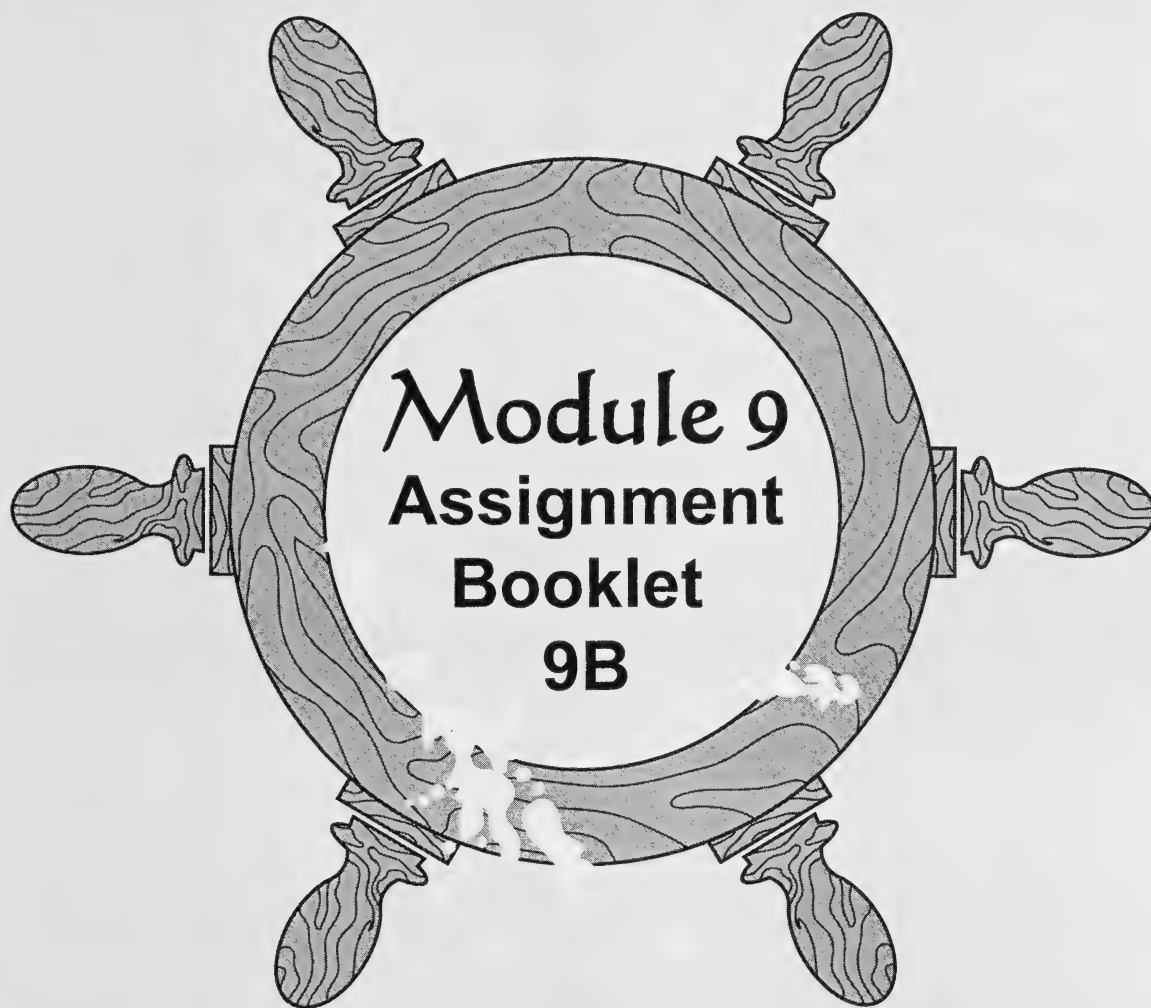
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# Mathematics 5



## 2-D Shapes and 3-D Objects



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LEARNING

## FOR TEACHER'S USE ONLY

### Summary

	Total Possible Marks	Your Mark
Lesson 3 Assignment	30	
Numbers in the News	10	
	40	

### Teacher's Comments

Mathematics 5

Module 9: 2-D Shapes and 3-D Objects

Assignment Booklet 9B

Lesson 3 Assignment and Numbers in the News

Learning Technologies Branch

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Students	✓
Teachers	✓
Administrators	
Home Instructors	
General Public	
Other	



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## **ASSIGNMENT BOOKLET 9B**

### **MATHEMATICS 5—MODULE 9: 2-D SHAPES AND 3-D OBJECTS**

Your mark on this module will be determined by how well you do your assignments in the Assignment Booklets.

Work slowly and carefully. If you are having difficulties, go back and review the appropriate lessons.

There is one lesson assignment and a Numbers in the News project in this Assignment Booklet. The total value of the lesson assignment is 30 marks. The Numbers in the News project is worth 10 marks. The value of each assignment is stated in the left margin.

Be sure to proofread each assignment carefully.

30

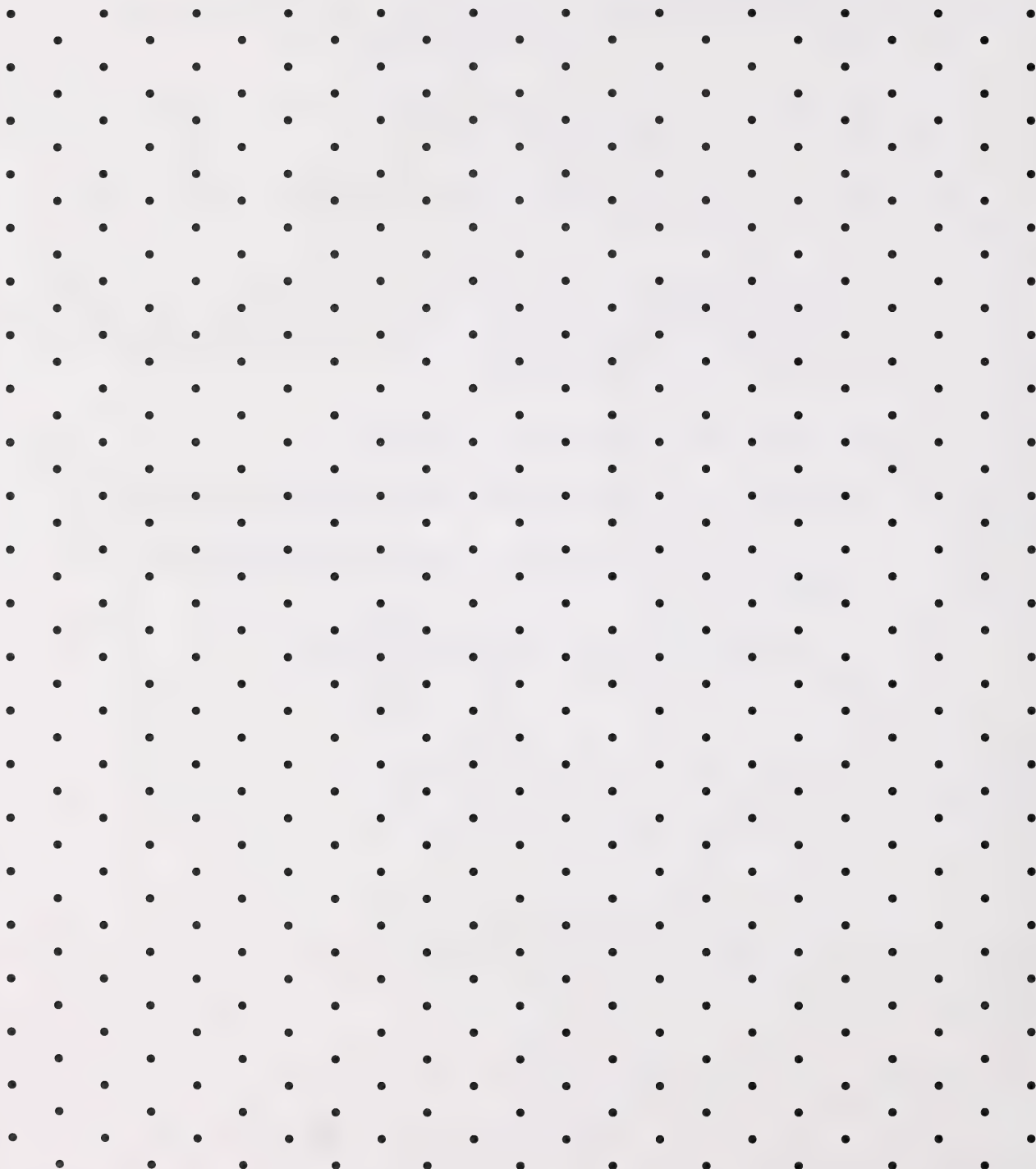
3

#### **Lesson 3 Assignment: Building and Drawing 3-D Objects**

1. A small box is a rectangular prism. It is 5 cm long by 3 cm wide. It has a height of 2 cm.
  - a. Find the dimensions of all the faces for the box.

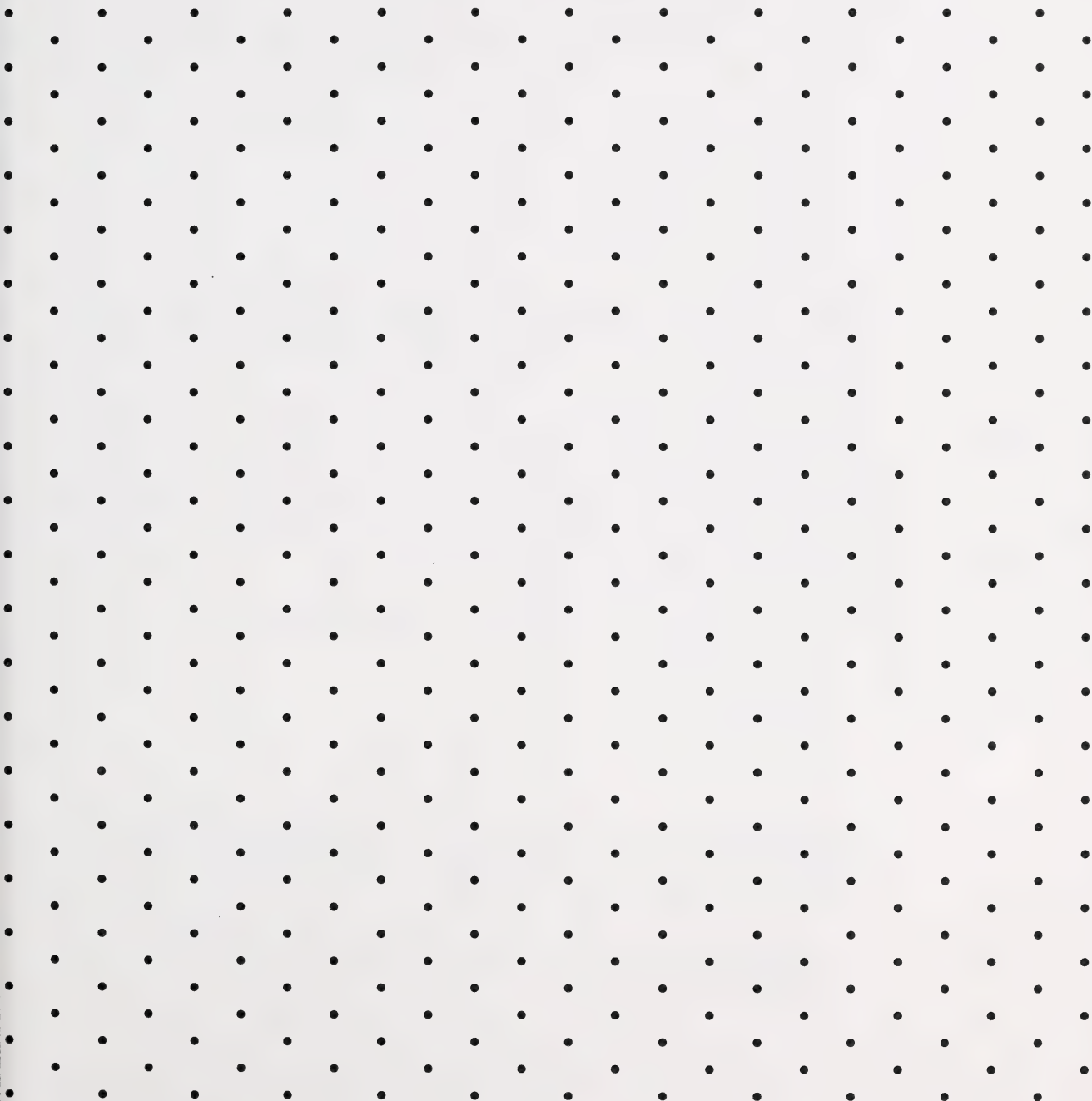
④

b. Draw and label the box on the triangular dot paper.



2. The dimensions of a block of cheese are 4 cm by 5 cm by 6 cm.

⑥ Draw and label three different pictures of the cheese on the triangular paper so that each picture has a face of a different shape on top.





③

3. Two dimensions of one rectangular solid are 4 cm by 5 cm and two dimensions of another rectangular solid are 3 cm by 6 cm. Could these two solids both have a face with the same dimensions? Explain.

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4. How many planes of symmetry does each of the following solids have?  
**Hint:** You may wish to make clay figures and cut them to find the lines of symmetry.

②

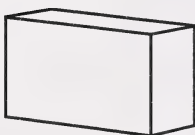
a.



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②

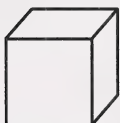
b.



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②

c.



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5. Two storage crates with flat lids are built in the shape of rectangular prisms. The lid of one crate measures 4 dm by 5 dm and the lid of the other crate measures 3 dm by 4 dm.

②

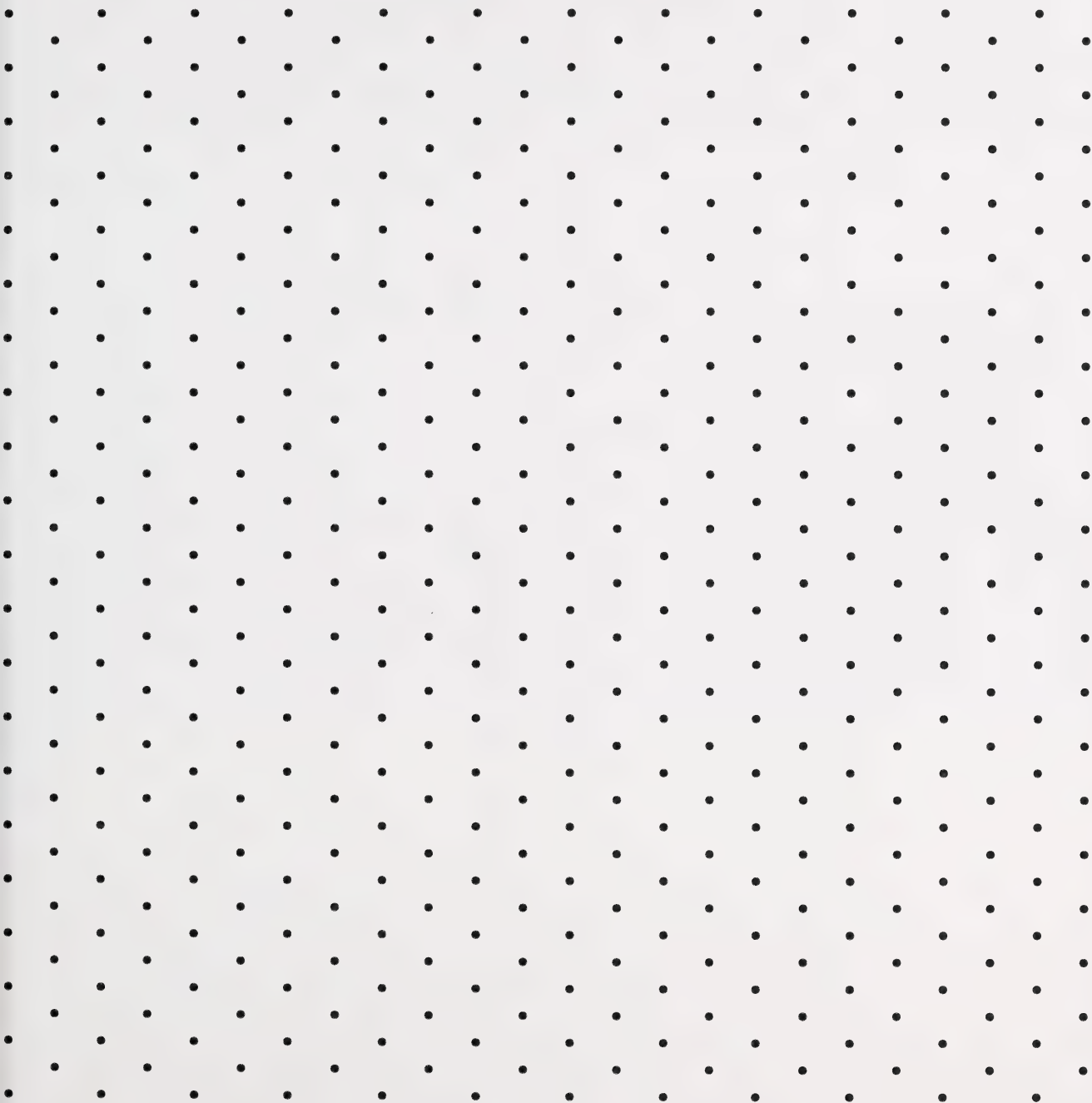
- a. Explain how both crates could have faces with the same dimensions.

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- ④ b. Use the triangle dot paper to draw pictures of both crates, showing their lids on the top. Label the dimensions.



②

6. A vase that is shaped like a prism has an equilateral triangle for its base. The perimeter of the base is 27 cm. If the vase is 30 cm high, what are the measures of the sides of its faces? Explain.

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10

**NUMBERS IN THE NEWS**

Go through the scavenger hunt list for Module 9 so you have clipped at least one example for each question. Ask your home instructor to check the samples you found. Choose the sample you wish to use, and label each one with the scavenger hunt number it matches. Organize your samples and put them together with any other information required. Submit your project with this Assignment Booklet.

Ask yourself the following questions:

- Is my Numbers in the News project complete?
- Do my samples show the ideas clearly?
- Did I take care to be neat when organizing and labelling my work?









